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PIP submission on the Independent Communications Authority of South Africa (ICASA) notice of intention to amend Annexure B of the Radio Frequency Spectrum amendment regulations, 2021 to allow licence exempt use of the lower 6 GHz Band

Introduction

Policy Impact Partners (PIP) is a global consultancy focused on connectivity and digital policy issues, with a particular focus on advocating policies and conducting analysis that promote the efficient utilisation of radio frequency spectrum. PIP works on behalf of several companies in the Wi-Fi ecosystem to raise awareness of the importance of Wi-Fi connectivity and the need for a balanced regulatory approach between licence-exempt and licensed spectrum to address the needs of all stakeholders involved. In our response we provide some general and specific comments for your consideration.

General comments

PIP congratulates the Authority on the publication of this draft amendment which seeks to allow licence exempt use of the lower 6 GHz (5925-6425 MHz) band. This proposed amendment is in line with the recommendations provided by the African Telecommunications Union in SS4-1(3) and Annex 3 of ATU-R Recommendation 005-0: Implementation of Emerging Radiocommunication Technologies.

The target contained in the Broadband Policy – South Africa Connect 2013 requires 100% of end users to have broadband access speeds of 10 Mbps and 80% to have speeds of 100 Mbps by 2030. Additionally, one of the objectives of South Africa Connect is *affordable broadband available nationally, to meet the diverse needs of public and private users, both formal and informal, consumers and citizens*. In order to achieve the speed and affordability targets, there is a need to adopt a mix of technologies to provide high quality and affordable universal access

to the Internet. Making more spectrum available, especially on a licence-exempt basis, will help to make Internet services more affordable and accessible.

Lower 6 GHz (5925 – 6425 MHz) Band

PIP commends the Authority for implementing ATU-R Recommendation 005 on Emerging Technologies, which requests African Administrations to make the lower 6 GHz (5925-6425 MHz) band available for licence-exempt WAS/RLAN. With Wi-Fi 6E devices already in the market, this decision will ensure that South Africa reaps the socio-economic benefits of access to reliable broadband services offered through Wi-Fi 6E technology among other broadband technologies available. The National Development Plan 2030 (NDP 2030)[1] recognises that national development requires a seamless information infrastructure that will be universally available and accessible, at a cost and quality at least equal to South Africa's main peers and competitors, by 2030. The Authority's decision to make this portion of the band available for use by licence-exempt WAS/RLANs is a significant step towards realising the desired broadband connectivity and affordability in South Africa.

Upper 6 GHz (6425 – 7125 MHz) Band

PIP urges the Authority to consider opening the upper 6 GHz (6425 – 7125 MHz) band, in addition to the lower part of the band, for use by licence-exempt WAS/RLANs. PIP understands that sharing and compatibility studies, under WRC-23 agenda item 1.2, are currently ongoing to ascertain possible identification of the upper 6 GHz band for IMT. While we respect this work being conducted by ITU WP5D in preparation for WRC-23, our view is that it should not be a barrier to the opening of this band for use by licence-exempt WAS/RLAN. It is important to note that some countries such as the United States, Canada and Brazil in the Americas (ITU Region 2) and South Korea in Asia (ITU Region 3) have allowed licence-exempt WAS/RLANs to operate in the entire 1200 MHz of the 6 GHz (5925-7125 MHz) band. Saudi Arabia was the first country in ITU Region 1 to allow licence-exempt access to the full 6 GHz band for WAS/RLANs.

Further, several studies have shown that opening the entire 6 GHz band for licence-exempt WAS/RLANs would realise better economic and social benefits to the citizens as compared to identifying the upper portion of the band for IMT. For instance, a whitepaper issued in 2022 by the Dynamic Spectrum Alliance (DSA) noted that, in Germany mobile networks delivered 5.2 GB per Hz of assigned spectrum. At the same time, Wi-Fi delivered approximately 167 GB per Hz, operating exclusively in the 2.4 GHz and 5 GHz bands in 2021[2].

Another study, conducted by Telecom Advisory Services and commissioned by the Wi-Fi Alliance (WFA) in 2021, looks at the economic benefits of opening the 6 GHz band for licence-exempt WAS/RLANs in South Africa and globally. The results indicated that Wi-Fi use in South

[1] https://www.gov.za/sites/default/files/gcis_document/201409/ndp-2030-our-future-make-it-workr.pdf

[2] *DSA-WhitePaper-How-do-Europeans-connect-to-the-Internet.pdf (dynamicspectrumalliance.org)*

Africa generated cumulative economic value of US$31 billion in 2021 and will increase to US$44 billion in 2025, consisting of GDP contribution, producer surplus to enterprises, as well as consumer surplus to the general population[3]. The full increase in economic benefit of Wi-Fi will materialise if the Authority opens all of the 6 GHz band for licence-exempt WAS/RLAN use.

On 6 December 2022 Ofcom the UK communications regulator published a position paper[4] - *Update on Upper 6 GHz band*, which states that the UK has adopted a No Change position on WRC-23 agenda item 1.2 which seeks identification of the upper 6 GHz (6425-7125 MHz) band for IMT. Ofcom's decision takes into account -

- The risk of missing out on innovation opportunities if the band is identified for IMT since Wi-Fi does not have other bands for expansion while IMT has several other bands.
- Wi-Fi networks may not keep up with demand if the 6 GHz band is not made available for licence-exempt Wi-Fi
- The use of higher power outdoor mobile in the band carries a greater risk of coexistence issues than lower power Wi-Fi and licence exempt applications

Ofcom has indicated that it intends to promote the adoption of a "no change" European Common Proposal (ECP) in the relevant CEPT preparatory meetings (e.g., ECC PT1 and CPG). If Europe adopts a common proposal for No Change on identification of the upper 6 GHz band for IMT, it will be difficult for ITU Region 1 (Europe, Middle East and Africa) to have a common position in support of IMT identification. Global, and even regional, harmonization of IMT identification in this band would therefore not be possible. Such a development would result in reduced economies of scale and ultimately relatively higher prices for IMT equipment in the upper 6 GHz band.

A full evidence base on licence-exempt access to the 6 GHz band, containing policy reports, economic analysis and technical studies is available at www.6ghz.info.

The 4th Industrial Revolution (4IR)

The COVID-19 pandemic showed that having a ubiquitous, affordable and resilient ICT infrastructure is important for deployment of online productivity and collaboration tools as well as the 4th Industrial Revolution (4IR) technologies. Jegede states that the COVID-19 pandemic ushered in the 4IR in South Africa by removing the fear of robots replacing humans in the workplace[5]. To successfully implement the 4IR, efficient utilisation and management of spectrum is critical. Wi-Fi 6E and Wi-Fi 7 are expected to be key contributors to the 4IR,

[3] https://www.wi-fi.org/download.php?file=/sites/default/files/private/Global_Economic_Value_of_Wi-Fi_2021-2025_202109.pdf

[4] https://www.ofcom.org.uk/__data/assets/pdf_file/0028/248770/update-on-upper-6hz-band.pdf

[5] https://www.unido.org/stories/south-africas-capacity-deploy-fourth-industrial-revolution-technologies-post-covid-19#story-start

together with mobile communication (5G and 6G), impacting all sectors of the economy. The lower 6 GHz band contains 500 MHz bandwidth, which can only accommodate a limited number of Wi-Fi 6E channels. While Wi-Fi 6E is designed to operate on 80 MHz and 160 MHz channels, the much anticipated Wi-Fi 7, whose design is already underway, will operate with channels up to 320 MHz wide. Without the upper portion of the band available for licence-exempt WAS/RLANs access, South Africa would miss the full benefits that the emerging wireless technologies would bring. With its wide channels which can support high-speed internet connectivity, Wi-Fi 7 will bring into reality applications such as virtual/augmented reality (VR/AR), and revolutionise manufacturing, mining, education, medical applications, entertainment, as well as tourism among several other sectors.

Specific Comments

1. *No spectrum fees for licence-exempt use of the L6 GHz band*

PIP welcomes the proposal by the Authority to allow licence-exempt use of the lower 6 GHz band, which does not attract spectrum fees. This will assist in providing affordable broadband services to the South African citizens, and bringing more people online, especially the low-income earners.

The ITU/UNESCO Broadband Commission has called for low and middle-income countries to make entry-level broadband services affordable, in line with the 2025 Broadband Advocacy Target 2;

"By 2025, entry-level broadband services should be made affordable in low- and middle-income countries at less than 2% of monthly Gross National Income (GNI) per capita[6]."

At a time when many African countries still lag behind in achieving this target, PIP is pleased to see many of them, including South Africa, taking steps towards achieving the target. Spectrum fees are a major contribution to the expensive mobile broadband tariffs we continue to witness across Africa, and finding ways of eliminating the fees, or at least reducing them, would significantly lower the cost of broadband access.

2. Insert operating modes

PIP suggests that the table contained in Annexure B should be amended by the insertion of operating modes that correspond to the indicated power limits as shown below.

[6] The ITU/UNESCO Broadband Commission, 2025 Broadband Advocacy Target 2

Column A Frequency Bands K=kHz M=MHz G=GHz	Column B Application Type	Column C Maximum Radiated Power, Field Strength or Sensitivity Limits	Column D Relevant Performance Standards	Column E Additional Requirements
5925–6425M	Wireless Access Systems / Radio Local Access Network (WAS & RLAN) • Low Power Indoor (LPI) – indoor use only • Very Low Power (VLP) – indoor and outdoor use	LPI - 23 dBm e.i.r.p VLP - 14 dBm e.i.r.p	EN 303 687	ATU-R Rec.005-0 A3, 2021; (EU) 2021/1067

3. Amend RFSP 2021 to reflect that licence exempt use of the L6 GHz (5925-6425 MHz) band is allowed

As a consequence of the proposed approval of use of the lower 6 GHz band by licence-exempt WAS/RLAN, the relevant section of the National Radio Frequency Plan 2021 should be amended to reflect this change. To this end, PIP recommends –

1. Insertion of "WAS/RLAN" in the **Typical Applications** section of the 5925-6425 MHz allocation table e.g.

   Fixed links - Lower 6 GHz (5925- 6425 MHz) BFWA
   Fixed-satellite uplinks (PTP/VSAT/SNG) (5850-6425 MHz)
   ESVs (5925 – 6425 MHz)
   Radio astronomy (observation of Methanol)
   Licence-exempt WAS/RLAN

2. In the **Notes and Comments** section of the 5925-6425 MHz allocation table the following change should be made –

   Channelling plan for L6 GHz band in accordance with ITU-R Rec. F.383 latest version.
   Earth Station onboard vessels (ESV) also allowed under FSS. Resolution 902 (WRC-03)
   ~~Consideration may be made for future License exempt provided it is feasible for the protection of incumbent service.~~ Technical and operating parameters for licence-exempt use in accordance with Annex 3 of ATU-R Recommendation 005-0

PIP also recommends that the Authority should consider making it clear that the channel plan contained in ITU-R Rec. F.383 applies only to fixed services operating in the lower 6 GHz (5925-6425 MHz) band. This channel plan does not apply to the lower 6 GHz band when it is used by licence-exempt WAS/RLAN.

A summary of our recommendations is shown in the table below in tracked changes mode.

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
5 925-6 700 MHz FIXED 5.457 FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B MOBILE 5.457C 5.149 5.440 5.458	**5 925-6 425 MHz** FIXED 5.457 NF14 FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B MOBILE 5.149 5.440 5.458	Fixed links - Lower 6 GHz (5925-6425 MHz) and Upper 6 GHz (6425-7110 MHz), BFWA Fixed-satellite uplinks (PTP/VSAT/SNG) (5850-6425 MHz) ESVs (5925 – 6425 MHz) Licence exempt WAS/RLAN	Channelling plan for L6 GHz band in accordance with ITU-R Rec. F.383. Channelling plan for U6 GHz band in accordance with ITU-R Rec. F.384. Technical and operating parameters for licence-exempt use in accordance with Annex 3 of ATU-R Recommendation 005-0

PIP will be pleased to deliver a presentation if the Authority decides to host oral hearings as part of this consultation. Should you require any further information regarding this submission, including an in-person discussion of the highlighted issues, please do not hesitate to reach out to us, and we would be glad to help.

Yours sincerely

MORTIMER HOPE

Associate Director and Africa Lead

Policy Impact Partners